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EXAMINER

BOAKYE, ALEXANDER O

ART UNIT	PAPER NUMBER
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2667

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/584,539

Applicant(s)

CAO, CARL F.

Examiner

Alexander Boakye

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-23 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 4, 5, 6, 7, 8, 10 and 12-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Gupta et al. (Impacts of Handoff on TCP Performance in Mobile Wireless Computing).

Regarding claims 1, 12, 13, 21 and 22, Gupta discloses a method implemented by a wireless network (the claimed wireless network reads on base stations of Fig. 3) for a TCP connection between a transmitting host (the claimed transmitting host reads on FH of Fig. 3) and a receiving host (the claimed receiving host reads on MH, of Fig. 3) and a wireless receiving host (MH, Fig. 3) served by the wireless network (base stations of Fig. 3), the method comprising: the wireless network (base stations of Fig. 3) determining when the wireless receiving host (the wireless receiving Host is the mobile host) is in handoff (Page 184, first column, paragraphs 1, 2 and 3) ; the wireless network (base station of Fig. 3) determining when the wireless receiving host is no longer in handoff (Page 186, first column, paragraph 1); the wireless network notifying the transmitting host when the wireless receiving host is in handoff and when the wireless receiving host is no longer in handoff (Page 187, second column, paragraph three).

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Regarding claim 2, Gupta discloses that a physical layer protocol (Page 187, second column, paragraph 4 ; the claimed physical layer protocol reads on wired link) determines when the wireless receiving host is in handoff and when the wireless receiving host is no longer in hand off (Page 187, second column, paragraph three).

Regarding claim 3, Gupta discloses the wireless network (base stations of Fig. 3 reads on the claimed wireless network) receiving packets over the TCP connection from the transmitting host (FH, Fig. 3); while the wireless receiving host (MH, Fig. 3) is in handoff, the wireless network buffering the packets received over the TCP connection (Page 187, first column, paragraphs 1, 2, 3 and 4 respectively); after the wireless receiving host is no longer in handoff, the wireless network transmitting the buffered packets to the wireless receiving host (Page 188, first column, paragraph 1).

Regarding claim 4, Gupta discloses that the wireless network notifying the transmitting host when the wireless receiving host is in handoff (Page 187, second column, paragraphs 2 and 3) and when the wireless receiving host is no longer in handoff is done using acknowledgement packets (Page 187, second column, paragraphs 1 and 2).

Regarding claim 5, Gupta discloses that the wireless network notifying the transmitting host when the wireless receiving host is in handoff (Page 187, first column, paragraph two to column 2, paragraphs 1, 2 and 3 respectively) and when the wireless receiving host is no longer in handoff using acknowledgement packets comprises: the wireless network (base stations of Fig. 3 reads on the claimed wireless network) receiving acknowledgement packets from wireless receiving host in respect of the TCP

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connection (Page 187, second column, Paragraphs 1 and 2) ; the wireless network including an indication in at least one acknowledgement packet of whether the wireless receiving host is in handoff (Page 187, second column, paragraphs 2 and 3 respectively); the wireless network transmitting the acknowledgement packets (Page 187, first column, paragraph 2) to the transmitting host.

Regarding claims 6, 7,8 and 10, Gupta discloses that the wireless network notifying the transmitting host when the wireless receiving host is in handoff (Page 187, first column, paragraph two-column 2, paragraphs 1, 2 and 3 respectively) and when the when the wireless receiving host is no longer in handoff using acknowledgement packets (Page 187, second column, paragraph 3) comprises: the wireless network receiving acknowledgement packets from the wireless receiving host (Page 187, second column, Paragraphs 1 and 2) in respect of the TCP connection; the wireless network maintaining a local copy (the claimed local copy reads on duplicate acknowledgment) of a last received acknowledgement packet (Page 187, first column, paragraph 2); the wireless network including an indication in at least one acknowledgement packet of whether the wireless receiving host in handoff (Page 187, second column paragraphs 2 and 3 respectively); the wireless network transmitting the acknowledgements packets to the transmitting host (Page 187,first column, paragraph 2); immediately after determining that the wireless receiving host is no longer in handoff , transmitting the local copy of the last received acknowledgement packet , the local copy (the claimed local copy reads on duplicate acknowledgment)indicating the wireless

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receiving host is no longer in handoff (Page 18, first column, paragraph 2- second column, paragraphs 1, 2 and 3 respectively).

Regarding claims 14 and 15, Gupta discloses the transmitting host receiving notifications of when the wireless receiving host is in handoff (Page 187, first column, paragraph two-column 2, paragraphs 1, 2 and 3 respectively) and when the wireless receiving host is no longer in handoff (Page 187, second column, paragraph 3); the transmitting host behaving in a first manner while the wireless receiving host is not in handoff (Page 187, first column, paragraph two-column 2, paragraphs 1, 2 and 3); the transmitting host behaving in a second manner while the wireless receiving host is in handoff (Page 187, first column, paragraph two-column 2, paragraphs 1, 2, and 3).

Regarding claim 16, Gupta discloses suspending transmission of packets on the TCP connection (Page 187, first column, paragraph 1 which reads second, it freezes the activity of the TCP sender which prevents further data sending from the TCP sender. This can avoid using too much memory at the BS); ignoring timeouts due to packets which been transmitted for which no acknowledgements have been received (Page 187, first column, paragraph 1).

Regarding claim 17, Gupta discloses suspending transmission of packets on the TCP connection (Page 187, first column, paragraph 1 which reads second, it freezes the activity of the TCP sender which prevents further data sending from the TCP sender that can avoid using too much memory at the BS); ignoring timeouts due to packets which been transmitted for which no acknowledgements have been received (Page 187,

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first column, paragraph 1); freezing a TCP congestion window (Page 187, first column, paragraph 1).

Regarding claims 18 and 19, Gupta discloses a method comprising upon first receiving an indication that the wireless receiving host (MH, Fig.3) is not in handoff after (Page 186, first column, paragraph 1) previously having received an indication that the wireless receiving host is in handoff the transmitting host (FH, Fig. 3) resuming behaving in the first manner from a previous transmission context beginning with a packet following a last acknowledged packet (Page 187, second column, paragraphs 2 and 3)

Regarding claim 20, Gupta discloses that the transmitting TCP host behaving in a second manner while the wireless receiving host is in handoff further comprises suppressing fast retransmit (Page 187, second column, paragraphs 2 and 3).

Regarding claim 23, Gupta discloses means for determining when the wireless receiving host is in handoff (Page 184, first column 1, paragraph 1); means for determining when the wireless receiving host is no longer in handoff (Page 186, first column, paragraph 3); means for notifying the transmitting host when the wireless receiving host is in handoff and when the wireless receiving host is no longer in handoff (Page 187, first column, paragraph two-column 2, paragraphs 1, 2 and 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al. (Impacts of Handoff on TCP Performance in Mobile Wireless Computing) in view of Connery et al. (US Patent # 5,937,169).

Regarding claim 9, Gupta discloses wherein notifying the transmitting host when the wireless receiving host is in handoff and when the wireless receiving host is no longer in handoff using acknowledgement packets (Page 187, first column, paragraph two- column 2, paragraphs 1, 2 and 3 respectively). What Gupta does not disclose is using a TCP flag in the acknowledgement packets. However, Connery teaches using a TCP flag in the acknowledgement packets (column 14, lines 57-59; see Fig. 4). One of ordinary skill in the art would have been motivated to incorporate a TCP flag in the acknowledgment packet in the communication network of Gupta in order to improve performance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a TCP flag in the acknowledgement packet such as the one taught by Connery in the communication network of Gupta with the motivation being that it provides reliability, system performance improvement and efficiency.

Allowable Subject Matter

Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Boakye whose telephone number is (703) 308-9554. The examiner can normally be reached on M-F from 8:30am to 6:00pm.

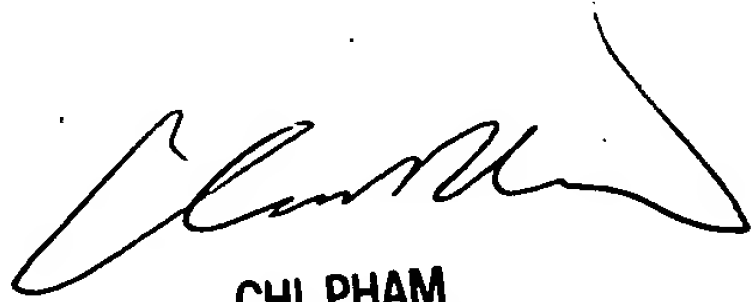
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham, can be reached on (703) 305-4378. The fax number is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 305-4750.

Alexander Boakye

Patent Examiner

AB

11/25/03


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